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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,511	07/21/2003	Osamu Shimamura	50195-376	3790

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Washington, DC 20005-3096

EXAMINER

LEE, CYNTHIA K

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/622,511	SHIMAMURA ET AL.	
	Examiner	Art Unit	
	Cynthia Lee	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/21/2003</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS: 7/14/2005</u> . |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-17 in the reply filed on 1/5/2006 is acknowledged. The traversal is on the ground(s) that the Examiner has no basis for the assertion that "the method can be made by a product that doesn't require the positive electrode terminal lead to be sandwiched between welded portions. This is not found persuasive because the method does not require that its product comprise a positive electrode terminal lead to be sandwiched between welded portions and thus, the process can be used to make a different product. Furthermore, in this case, the restriction is proper because Groups I and II are directed to independent and distinct inventions that have separate status in the art by their different classification (i.e. Group I in class 429/209 and Group II classified in 29/623.2).

The requirement is still deemed proper and is therefore made FINAL.

Priority

Acknowledgement has been made of applicant's claim for priority under 35 USC 119 (a-d) or (e). The certified copy has been filed on 7/21/2003.

Information Disclosure Statement

The Information Disclosure Statement (IDS) filed 7/21/2003 and 6/14/2005 have been placed in the application file and the information referred to therein has been considered.

Drawings

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The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: S7 found on pg. 17 (1st full par.). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

The recitation "In Figs. 4A and 5B" (1st full par. on pg. 11) should read "In Figs. 4A and 4B". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear which surface area is being divided by a cell capacity.

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Claims 14 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation "at least more than" is unclear. Claims dependent from claims 14 and 16 are rejected for the same.

Claims Analysis

The preamble "automobile cell" in claim 1 and the limitation "mounted on a vehicle" in claim 17 are interpreted as an intended use language. Thus, it was considered but was not given patentable weight.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 and 14-17 are rejected under 35 U.S.C. 102(a)/103(a) as being anticipated or unpatentable over Shibuya (US 6291098) in view of Murai (US 6444355).

Shibuya discloses a thin type cell (flat type cell) comprising a positive electrode having a positive electrode active substance layer, a negative electrode having a negative electrode active substance layer, and a separator interposed between the positive electrode and the negative electrode, the positive electrode, the negative electrode and the separator being stacked in a stack direction to allow the positive electrode and the negative electrode, opposing to the positive electrode via the separator. See Fig. 1 and 3. The cell out sheath is made from a laminate film

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composed of polymer and metal and welded to gas-tightly encapsulate the electric power generating element inside the cell outer sheath such that the cell is formed in a flat shape. It further consists a positive electrode terminal lead electrically conductive with the positive electrode and sandwiched between welded portions and extending to an outside of the cell outer sheath. The same applied for the negative electrode terminal lead. Shibuya discloses that the anode comprised coating the active material onto nickel foil with a total thickness of 200 μm , in which the nickel foil thickness is 100 μm (8:1-30). Thus, the anode active material thickness is 50 μm (applicant's claim 10). Shibuya discloses that the cathode with an active material coated on an aluminum net current collector has a thickness of 130 μm . It is commonly known that aluminum net has a thickness of 30 μm (see Murai US 6444355, 7:10-15), in which the cathode active material layer is 50 μm in thickness. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an aluminum net with a thickness of 30 μm , as taught by Murai, for the benefit of forming a cell with an aluminum net with similar dimensions as the other components of the cell.

Although Shibuya does not disclose the thickness of the separator and the electrolyte, adding the thickness of the cell components, which include the sheath (89 μm), positive electrode (130 μm), negative electrode (200 μm), positive terminal (110 μm), negative terminal (110 μm), and dividing by the thickness of the positive and negative active material layer yields no greater than ~ 2 , which is well below 80. See 6:55-67-7:1-15. Thus, when one were to include the separator and the electrolyte thickness, the ratio would not be greater than 80. However, absent specific thickness of

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the separator and the electrolyte, it is obvious that one of ordinary skill in the art would form the separator and the electrolyte of comparable dimensions as the electrode and the terminal and thus, yielding a ratio not greater than 80.

The dimensions of the sheath are 8 cm by 10 cm (applicant's claim 2). The discharge current of the cell is 0.25 mA/cm^2 for 10 weeks or $190 \text{ cm}^2/\text{Ah}$ (See fig. 16 and 9:5-10) (applicant's claim 3). The terminal leads are made from carbon, nickel, aluminum, copper, tungsten, stainless steel, iron, silver, gold, alloys thereof (4:1-5) (applicant's claim 9). Shibuya discloses that the cell outer sheath is made from a pair of laminate films (6:55-65) (applicant's claim 11).

Shibuya does not disclose that the value obtained by dividing a thickness of the electrode terminal lead along the stack direction by a sum of a total thickness of the electrode current collector in a cell is equal to or greater than 0.4 and equal to or less than 2.0 (applicant's claims 4 and 5). However, Shibuya discloses that the thickness of the electrode terminal is 110 μm . The current collector comprises aluminum net, which it is commonly known that aluminum net is $\sim 30 \mu\text{m}$ in thickness (see Murai, US 6444355, 7:10-15). However, one of ordinary skill in the art would be motivated to stack several unit cells together to increase the cell capacity, thus yielding a ratio as claimed by the applicants. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to connect several unit cells for the benefit of increasing the cell capacity, thus possessing the ratio of thickness of the terminal and the total of current collectors as claimed by the applicants. Generally, differences in

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ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. See MPEP 2144.05.

The cathode terminal dimensions are 5mm by 3mm (applicant's claims 6 and 7). Further, Shibuya discloses that the width and the length of the electrode terminals are matched to the shape of the cell. Preferably, the width and the length are selected so that the voltage generated across both ends of the electrode terminals used as cells will be not higher than 1/100 of the nominal voltage of the cell (5:25-30). Further, for preventing short-circuiting, the thickness of the electrode terminal may be set so as to be smaller than that of the sheath (4:49-51). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the electrode terminal dimensions in accordance with the sheath dimensions for the benefit of enclosing the terminal in the sheath. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. See MPEP 2144.05.

Shibuya's positive and negative electrode terminals extend to the outside from opposing sides of the cell outer sheath (applicant's claim 8).

Shibuya does not disclose that the cell outer sheath is made from one sheet (applicant's claim 12). Shibuya discloses that the cell outer sheath is made from two sheets. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the cell sheath from one sheet instead of two sheets for the benefit of easier sealing.

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Shibuya does not explicitly disclose that more than one cell is connected in series or parallel (applicant's claim 14). Shibuya discloses only one cell. However, this limitation substantially encompasses the two electrical connections known in the electrical field. Further, it's commonly known in the art to join several cells together for the benefit of increasing the output voltage or current. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add several cells and connect them in series or in parallel, depending on if the voltage or the current needs to be increased.

It is commonly practiced in the art that a bus bar is used to connect electrode terminal leads (applicant's claim 15). It is further noted that when more than one cell is connected in series or on parallel, they are either stacked or positioned side by side (applicant's claim 16).

The limitation "automobile cell" has been considered, but it adds nothing to the patentability of the present claims because it is recited in the preamble. Additionally, Shibuya's cell (this type cell) has substantially the same configuration of applicant's cell (flat type cell). It also recites an intended use for the cell.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibuya (US 6291098) in view of Takami (US 6544682) as applied to claim 1 and incorporated herein.

Shibuya does not disclose that the cell is wound (applicant's claim 13). However, Takami discloses that the cell is wound. Thus, it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to wind the cell components for the benefits of eliminating cutting the cell components.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ckl

Cynthia Lee

Patent Examiner


RAYMOND ALEJANDRO
PRIMARY EXAMINER